

LESSON PLAN

DEPARTMENT OF ENVIRONMENTAL STUDIES / SCIENCE, MKC

(UNDER CCF,2022)

SEMESTER-1 [July to December]
SEMESTER-2 [December to June]
SEMESTER-3 [July to December]

Interdisciplinary Course (IDC) in Environmental Science

Total Marks-75 (Theory 50 + Practical 25)
Credit -3 (2 TH + 1 P)

Unit (Theory)	Sub-unit	Hours	Faculty	Stream
Unit 1: Understanding the Environment	➤ Concept of environment and its Transdisciplinary approach, perspectives of environmentalism.	5	Ms. Paushali Guha Sarkar	Three-year (multidisciplinary)
	➤ Environmental ethics, Man-environment relationships, Environment-society interface, conflict between environment and development. ➤ Concept of carrying capacity, resilience and ecological footprints. Carbon footprint and low carbon economy.		Ms. Susmita Basu	Four-year (Honours)
Unit 2: Environmental systems	➤ Concept of atmosphere, lithosphere, hydrosphere and biosphere and their interactions.	4	Ms. Paushali Guha Sarkar	Three-year (multidisciplinary)
	➤ Importance of biogeochemical cycles (Carbon, Nitrogen, Sulphur, Phosphorous). ➤ Global heat budget, basics of climate and weather, meteorological parameters, climatic zones of the world Basics concept of renewable energy resources, introduction to biogeographical realms.		Ms. Susmita Basu	Four-year (Honours)

Unit (Theory)	Sub-unit	Hours	Faculty	Stream
Unit 3: Environmental vulnerability	➤ Environmental degradation: qualitative and quantitative. Air, water and soil pollution-source, impacts and remedial measures. ➤ Concept of Municipal solid waste and hazardous waste, 5Rs of waste management. ➤ Basic concept of circular economy. ➤ Biodiversity loss: extent of loss, natural and anthropogenic causes and impact of biodiversity loss on ecology and economy. ➤ Climate change: past and present scenario of climate change. drivers of climate change. impact of climate change on sea level rise, biodiversity, agriculture, disease prevalence, food security, migration and demographic changes.	7	Ms. Paushali Guha Sarkar	Three-year (multidisciplinary)
			Ms. Susmita Basu	Four-year (Honours)
Unit 4: Environmental Health	➤ Concept of Environmental health: definition and components, Environmental risk factors. ➤ Water borne diseases: Cholera and Diarrhoeal diseases. ➤ Vector borne diseases: Dengue and Malaria. ➤ Occupational health and Health consequences of different occupations- Silicosis, Asbestosis. ➤ Basics of Xenobiotics.	5	Ms. Paushali Guha Sarkar	Three-year (multidisciplinary)
			Ms. Susmita Basu	Four-year (Honours)

Unit (Theory)	Sub-unit	Hours	Faculty	Stream
Unit 5: Sustainable development	➤ Concepts of sustainability. Genesis of Sustainable Development – Brundtland’s commission. ➤ Rio declaration – Agenda 21. ➤ Sustainable Development Goals (SDG). Sustainability development index, Sustainability in the context of energy use, agriculture, industry and urbanization. ➤ Watershed management and sustainable land use. ➤ Concept of sustainable agriculture.	4	Ms. Shreya Ghosh	Four-year (Honours)
			Dr. Aditi Mukhopadhyay	Three-year (multidisciplinary)
Unit 6: Disaster Management	➤ Types of disasters, disaster prediction and prevention, pre and post disaster management. Disaster Management cycle. ➤ Case studies of natural disasters – Cyclone ‘Phailin’, Cyclone ‘Amphun’, Kerala floods and anthropogenic disasters- Bhopal gas tragedy, Chernobyl disaster. ➤ Disaster management Act (2005) of India.	4	Ms. Shreya Ghosh	Four-year (Honours)
			Dr. Aditi Mukhopadhyay	Three-year (multidisciplinary)
Unit 7: Tools for addressing environmental challenges	➤ Monitoring and abatement technology for air pollution (monitoring of gaseous and particulates pollutants and abatement technologies – bag filter, scrubber, ESP, cyclone precipitator); water pollution (monitoring of DO, BOD, COD, coliform and primary treatment, secondary treatment, tertiary treatment technologies); Soil pollution abatement through bioremediation. ➤ Environmental application of Remote sensing and GIS. ➤ Valuation of environmental services: Stated preference and revealed preference methods (CVM, TCM, Hedonic pricing).	7	Ms. Shreya Ghosh	Four-year (Honours)
			Dr. Aditi Mukhopadhyay	Three-year (multidisciplinary)

Unit (Theory)	Sub-unit	Hours	Faculty	Stream
Unit 8: Environmental Management tools for Sustainable development	➤ Global and National Initiatives: Convention on Biological Diversity, 1992; Kyoto Protocol, 1997, Montreal Protocol, 1987; Basel convention, 1989, Copenhagen, 2009, Rio+20, 2012; Paris Accord, 2015. ➤ Environmental Management System and ISO 14001, Ecolabelling and Ecomark. ➤ Basics of Environmental Impact Assessment, Life Cycle Assessment. ➤ Clean Development Mechanism: Carbon trading and Polluters Pay Principle.	8	Ms. Shreya Ghosh	Four-year (Honours)
			Dr. Aditi Mukhopadhyay	Three-year (multidisciplinary)
Practical (Sl. No.)	Sub-topic	Hours	Faculty	Stream
1.	Measurement of meteorological parameters: Relative humidity, Rainfall, Atmospheric pressure, Wind speed.	1	Ms. Paushali Guha Sarkar	Three-year (multidisciplinary)
			Ms. Susmita Basu	Four-year (Honours)
2.	Biodiversity documentation and its quantification (Frequency, Density, Shannon weiner and Simpson's index of diversity) in local area and report submission.	2	Ms. Paushali Guha Sarkar	Three-year (multidisciplinary)
			Ms. Susmita Basu	Four-year (Honours)
3.	Submission of assignment on any case study of any sustainable environmental management (land, energy, agriculture, water, industrial pollution etc.).	1	Ms. Shreya Ghosh	Four-year (Honours)
			Dr. Aditi Mukhopadhyay	Three-year (multidisciplinary)

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DEPARTMENT OF ENVIRONMENTAL STUDIES / SCIENCE, MKC

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SEMESTER-1 [July to December]

Common Value-Added Courses (CVAC) on Environmental Studies

ENVS01: Fundamentals of Environment

Total Marks 50

Credit -2

Unit	Sub-unit	Hours	Faculty	Stream
Unit 1: Introduction to environmental studies	➤ Multidisciplinary nature of environmental studies. ➤ Scope and importance. ➤ Concept of sustainability, sustainable development, and sustainability goals. ➤ Low carbon lifestyle: Mission LIFE.	2	Ms. Paushali Guha Sarkar	B.A -Four-year (Honours)- Group-B
			Ms. Shreya Ghosh	B.A-Three-year (Multidisciplinary)- Group-A & B
				B.A-Four-year (Honours)- Group-A
				B. Com- Four-year (Honours)-H1
Unit 2: Ecology and Ecosystems	➤ Concept of ecology, ecosystem, and ecosystem services. ➤ Structure and function of ecosystem. ➤ Energy flow in an ecosystem. ➤ Ecological pyramid. ➤ Food chain and food web (Terrestrial and aquatic ecosystems). ➤ Basic concept of population and community ecology. ➤ Ecological succession,	5	Dr. Aditi Mukhopadhyay	B. Com- Four-year (Honours)-H2
				B. Com-Three-year (Multidisciplinary)
			Ms. Susmita Basu	B.Sc.-Four-year (Honours) & Three-year (Multidisciplinary)

Unit	Sub-unit	Hours	Faculty	Stream
Unit 3: Natural Resources	➤ Concept of renewable and non-renewable resources. ➤ Land resources and land use change; land degradation, soil erosion and desertification. ➤ Forest resources: importance, Deforestation- causes, consequences, and remedial measures. ➤ Water: use and over- exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state). ➤ Energy resources: Environmental impacts of energy generation, use of alternative and nonconventional energy sources, green energy. ➤ Natural resource accounting.	5	Ms. Paushali Guha Sarkar	B.A -Four-year (Honours)- Group-B
			Ms. Shreya Ghosh	B.A-Three-year (Multidisciplinary)- Group-A & B
				B.A -Four-year (Honours)- Group-A
				B. Com- Four-year (Honours)- H1
Unit 4: Biodiversity and Conservation	➤ Levels of biological diversity: genetic, species and ecosystem diversity. ➤ Biogeographic zones of India, Biodiversity hot spots, Endemism, India as a mega-diversity nation ➤ Threats to biodiversity, IUCN threat categories. ➤ In-situ and Ex-situ conservation of biodiversity, Protected area network. ➤ Role of indigenous communities in biodiversity conservation, Peoples Biodiversity Register. ➤ Bioprospecting and Biopiracy.	6	Dr. Aditi Mukhopadhyay	B. Com- Four-year (Honours)- H2
				B. Com-Three-year (Multidisciplinary)
			Ms. Susmita Basu	B.Sc-Four-year (Honours) & Three-year (Multidisciplinary)

Unit	Sub-unit	Hours	Faculty	Stream
Unit 5: Environmental Pollution	➤ Environmental pollution: concepts and types. ➤ Air, water, soil, noise and marine pollution- causes, effects and controls. ➤ Concept of hazards waste and human health risks ➤ Solid waste management: Control measures of municipal, biomedical and e-waste. ➤ Climate change, global warming, ozone layer depletion, acid rain and their impacts on human communities and agriculture.	6	Ms. Paushali Guha Sarkar	B.A-Four-year (Honours)- Group-B
			Ms. Shreya Ghosh	B.A-Three-year (Multidisciplinary)- Group-A & B
				B.A-Four-year (Honours)- Group-A
				B. Com- Four-year (Honours)-H1
			Dr. Aditi Mukhopadhyay	B. Com- Four-year (Honours)-H2
				B. Com-Three-year (Multidisciplinary)
			Ms. Susmita Basu	B.Sc-Four-year (Honours) & Three-year (Multidisciplinary)

Note: Full syllabus of the Common Value-Added Courses (CVAC) on Environmental Studies (ENVS 01: Fundamentals of Environment) for the students of Semester-1 is taught by Ms. Paushali Guha (Sarkar), Ms. Shreya Ghosh, Dr. Aditi Mukhopadhyay and Ms. Susmita Basu according to the stream.

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SEMESTER –2 [December to June]

Common Value-Added Courses (CVAC) on Environmental Studies

ENVS 02: Environmental Education

Total Marks 50

Credit -2

Unit	Sub-unit	Hours	Faculty	Stream
Unit 1: Environmental Education	➤ Concept, definition, and significance of environmental education. ➤ Genesis of environmental education, Tiblisi Declaration 1977. ➤ Philosophy of environmental education. ➤ Environmental awareness vis a vis environmental education.	3	Ms. Paushali Guha Sarkar	B.A-Four-year (Honours)- Group-B
				B. Com- Four-year (Honours)- H1
				B. Com-Three-year (Multidisciplinary)
			Ms. Shreya Ghosh	B.A-Three-year (Multidisciplinary) - Group-A & B
Unit 2: Rules and regulations of environment	➤ Necessity of rules and regulations, different types of rules and regulations, mistakes in implementing of environmental rules. problems in implementing environmental rules. ➤ Environment Laws in India: Wildlife (Protection) Act; Forest (Conservation) Act; Water (Prevention and control of Pollution) Act; Air (Prevention & Control of Pollution) Act; Environment Protection Act; Biodiversity Act. ➤ International agreements: Montreal Protocol, Kyoto protocol and climate negotiations; Convention on Biological Diversity (CBD)	5	Dr. Aditi Mukhopadhyay	B. A -Four-year (Honours)- Group-A
				B.Sc.-Four-year (Honours) & Three-year (Multidisciplinary)
			Ms. Susmita Basu	B. Com- Four-year (Honours)- H2

Unit	Sub-unit	Hours	Faculty	Stream
Unit 3: Human Communities and the Environment	➤ Human population growth: Impacts on environment, human health and welfare. ➤ Concept of Resettlement and rehabilitation. ➤ Environmental movements: Bishnois, Chipko. Silent valley, Big dam movements. ➤ Environmental ethics: Types, ecofeminism, role of cultures in environmental conservation.	5	Ms. Paushali Guha Sarkar	B.A-Four-year (Honours)- Group-B
				B. Com- Four-year (Honours)- H1
				B. Com -Three-year (Multidisciplinary)
			Ms. Shreya Ghosh	B.A-Three-year (Multidisciplinary)- Group-A & B
				B.A-Four-year (Honours)- Group-A
Unit 4: Disaster Awareness	➤ Fundamentals of hazard, disaster. risk and vulnerability. ➤ Disaster classification, Natural Disasters-floods, earthquake, cyclones, tsunami and landslides; Manmade Disaster. ➤ Case Studies: Minamata disaster, Bhopal gas disaster, Fukushima nuclear disaster, Kedarnath flood, Cyclone Aila, COVID- 19. ➤ Disaster management, Disaster warning systems.	6	Dr. Aditi Mukhopadhyay	B.Sc. -Four-year (Honours) & Three-year (Multidisciplinary)
			Ms. Susmita Basu	B. Com- Four-year (Honours)- H2

Unit	Sub-unit	Hours	Faculty	Stream
Unit 5: Role of environmental education in protecting environment	➤ Lifelong learning procedure, Pedagogy in environmental education; Formal and informal environmental education (Exhibition, role playing ability, quiz, debate, field trip, demonstration, project, poster presentation, seminar, eco-club) ➤ Role of NGOs and government institutions ➤ Role of information technology and mass media: Print, Electronic, and Social media	5	Ms. Paushali Guha Sarkar	B.A-Four-year (Honours)-Group-B
				B. Com- Four-year (Honours)-H1
				B. Com-Three-year (Multidisciplinary)
			Ms. Shreya Ghosh	B.A-Three-year (Multidisciplinary) - Group-A & B
				B.A-Four-year (Honours)-Group-A
			Dr. Aditi Mukhopadhyay	B.Sc.-Four-year (Honours) & Three-year (Multidisciplinary)
			Ms. Susmita Basu	B. Com- Four-year (Honours)-H2

Note: Full syllabus of the Common Value-Added Courses (CVAC) on Environmental Studies (ENVS 02: Environmental Education) for the students of Semester-2 is taught by Ms. Paushali Guha (Sarkar), Ms. Shreya Ghosh, Dr. Aditi Mukhopadhyay and Ms. Susmita Basu according to the stream.